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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,185	12/07/2001	C. David Capps	M-15660 US	5342

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EXAMINER

HARRINGTON, ALICIA M

ART UNIT PAPER NUMBER

2873

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/021,185	Applicant(s) CAPPS, C. DAVID	
	Examiner Alicia M. Harrington	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on after final amendment filed on 12/8/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

***This non-final rejection is in response to the after-final amendment filed on
12/8/06.***

Response to Arguments

1. Applicant's arguments with respect to claims 1-19 have been considered but are not persuasive. Applicant argues Yang fails to teach a large steering angle of the output beam being defined by a position of the source elements that was selected. However, the beam output from the source is incident upon the beam steerer according to the position the beam was output from the fiber. And after a second review of applicant's specification, the Examiner has not found any evidence in the original claims or specification that supports or teaches the large steering angle of the output beam being defined by a position of the source element that was selected. Thus, the following 112 first paragraph rejection will be set forth below in respect to claims 20-27. As for applicant's assertion that the output beam being directed toward one of the detector elements according to a large steering angle defined by an angle of the light received by the optics. However, the system is designed to optical direct the beam to the detector in accordance with the angle of incidence, thus, meets this claimed limitation.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 20-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification fails to teach the large steering angle of the output beam being defined by a position of the source element that was selected as claimed in claim 20. The Examiner has not found any evidence in the original claims or specification that supports this claimed limitation. Thus, one of ordinary skill in the art at the time the invention was made would not know how to make and/or use the invention without undue experimentation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 20-27, 35-37,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (US 6,671,428) in view of Mc Manamon (Optical Phased array Technology Publication).

Regarding claims 20-23, Yang discloses an optical beam steering system transmitter comprising (see base embodiment of figure 1):

a focal plane having a plurality of source elements thereon (laser fiber arrays with mount assembly not shown-col. 3,lines 60-67 and col. 2,lines 45-65); an optics system receiving light from a selected one of the source element and providing an output beam (collimated beam and focused beam-18 and 22), a large steering angle of the output beam being defined by a position of the source element that was selected (fiber array area in the mount); and
a beam steerer receiving (32 or 36- see col. 5, lines 1-30) the output beam and determining a steering angle of the output beam.

Yang uses a MEM array to provide beam steering. It is known the art to use MEMs array to steer a beam because the mirror elements can be controlled to steer a variety of angles. McManamon teaches that optical phase arrays have been developed to steer at 2 degrees (small angles) in optical sensor systems. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use small angle beam steering, since MEM array angles can be control through small angles, small angular deflections of beams as small as two degrees have been shown to have high steering efficiencies in phased array, and thus would facilitate increase optical switching times. The small angle deflection arrays also accommodate large transmissions while being compact, which improves transmission efficiencies.

Regarding claims 24, Yang discloses a collimator lens for receiving the beam form the array of fibers. Thus, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to have a wide-angle optic, to ensure all the beams are transmitted to the MEMs array and not lost.

Regarding claim 25, see figure 1 of Yang.

Regarding claim 26, Yang fails to specifically disclose an acoustic optical device as the beam steerer. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the an acoustic optical beam steer be implemented in the network, since the system is a telecommunication network, and the transmission of sound is a part of telecommunications, and an acoustic beam steerer would be an functional equivalent device.

Regarding claim 27, Yang discloses an optical switch in optical network (see col.2), and thus has a plurality of optical switching devices.

Method claims 35-37,39 are the substantially the function for transmission of light of the claimed apparatus claims discussed above in claims 20-27 and thus see Examiners notes above in claims 20-27.

6. Claims 28-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandler et al (US 2002/0122619) in view of Mc Manamon (Optical Phased array Technology Publication).

Regarding claims 28-31, Sandler discloses an optical beam steering receiver comprising:

A focal plane having a plurality of detector elements (fiber array and sensor)

an angle beam steerer (202 or 204- MEM or other beam steering devices known in the art- see sections 84-85 and 26-29) receiving collimated light and determining a steering angle of the light to direct the output beam toward on of the detectors;

an optics (310,312) system receiving the light from the beam steerer and to providing an output beam (see figure 1) towards an output detector. However, Sandler fails to specifically disclose where the beam steering was for small angles.

Sandler uses a MEM array to provide beam steering. It is known the art to use MEMs array to steer a beam because the mirror elements can be controlled to steer a variety of angles. McManamon teaches that optical phase arrays have been developed to steer at 2 degrees (small angles) in optical sensor systems. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use small angle beam steering, since MEM array angles can be control through small angles, small angular deflections of beams as small as two degrees have been shown to have high steering efficiencies in phased array, and thus would facilitate increase optical switching times. The small angle deflection arrays also accommodate large transmissions while being compact, which improves transmission efficiencies.

Regarding claim 32, Sandler uses an array of lens to focus light to the output detectors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a wide angle lens to assure the beams impinges over the area of the fiber optic array and sensors since it would provide the

equivalent function of directing the beams to the fibers over the entire array and such implementation would be within routine skill in the art.

Regarding claim 33-34, Sandler fails to specifically disclose embodiments wherein said plurality of detector elements comprises PIN's or APD's. However, the Examiner takes official notice that these detectors are well-known detectors used in telecommunication systems and Sandler discloses function equivalents (see section 59-62). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature, since they are well known and can be readily manufactured for use in micro-optical technology systems.

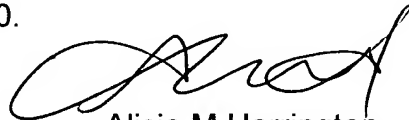
Method claims 35-39 are the substantially the function for receiving of light of the claimed apparatus claims discussed above in claims 28-31 and thus see Examiners notes above in claims 28-31.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alicia M Harrington
Primary Examiner
Art Unit 2873

AMH